

OpenHDS

Open-source Health and Demographic
Surveillance System

OpenHDS Community

Community

- University of Calabar CRHDSS, Nigeria
 - pioneer implementer
- University of Southern Maine, US - developer
- Ifakara Research Center, Tanzania
- Participants from different sites on the open mailing list from the INDEPTH workshop in Nov 2010



Background

- Strengthen Country Health Management Information Systems (HMIS)
- HMIS are clinic-focused and largely blind to community events; but HDSSs have potential to provide reliable denominator values and track HMIS indicators with greater accuracy
- How to build HDSS information systems that contribute to and inform public health policy
- Configurable by non-programmers

What we have done

- Open-source enterprise Java
- Multi-platform - web-based standalone, tablet, mobile
- Support various databases
- Multi-lingual (internationalized)
- Extensible with new forms and variables
- Secure with role-based access
- DDI-compatible
- Demographic rates computation
- Custom Reports and exports
- Web service – exposed API – potential external clients
- Auditing

- Cheaper on the long term;
collective design
and maintenance
- Allows easier collaboration
- Good tool for training
learning and discussion
- Wisdom of the crowd



OpenHDS Linkage with Health System

- Integrated with District Health Information System (DHIS) platform used by state ministries of health
- DHIS, implements open XML standards - SDMX-HD developed by WHO-HMN and DXF
- OpenHDS implements XML standard to allow automated export from OpenHDS to country/state DHIS
- Indicator repository



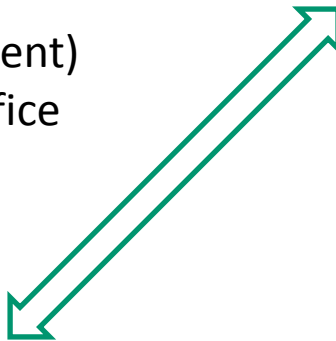
National/State Health Data warehouse



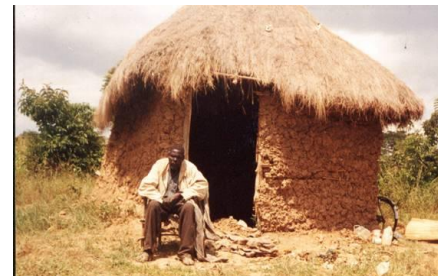
District (Local Government)
Health Information Office



HDSS Office



Health Facility



Community

HDSS- Health System Linkages

Where

- Akpabuyo HDSS, Cross River, Nigeria
- Baseline and 1st update done
- Verbal autopsy forms computerized
- Tablet piloted in Ifakara
- Mobile devices currently being tested in Cross river

Forms

- Baseline
- Update
- Amendments; individual, location, social group, death, in-migration, out-migration, membership, relationship, residency

Update form

Update

Update

Visit Id:

Location Name:

Date:

Shortcut Keys

- c - Clear Selected Individual
- p - Pregnancy Outcome
- d - Death
- i - In Migration
- e - Pregnancy Observation
- r - Relationship
- m - Membership
- o - Out Migration
- a - Attributes
- f - Finish

List of Individuals in Selected Location

Individual Id	Name	Birth Date	Gender	Last Event	
ABAS18	Ayo Bassey	19-12-1959	1	Death	Select
BJOH1H	Bayo John	19-12-1979	1	Death	Select
MGRA1Z	Mary Grape	19-12-1979	2		Select
NBAS1I	Nancy Bassey	19-12-1959	2		Select
OJOH1R	Obong John	19-12-1979	1	In Migration	Select
SBAS17	Sani Bassey	19-12-1979	1		Select

Selected Individual:

<input type="button" value="Preg. Outcome"/>	<input type="button" value="Relationship"/>
<input type="button" value="Death"/>	<input type="button" value="Membership"/>
<input type="button" value="In Migration"/>	<input type="button" value="Out Migration"/>
<input type="button" value="Preg. Observ."/>	

Verbal Autopsy and Coding

Standard Verbal Autopsy Questionnaire for Adolescent and Adult Deaths (12 years and over)

Background Information on Deceased

Name of deceased:

Deceased Individual Id:

House Id:

House Name:

Standard Verbal Autopsy Questionnaire for Neonatal Deaths (0–27 days)

Background Information on Deceased

Sex of

What is

What is

What is

If the o

Ident

Field Worker Id:

Date of interview: (dd-MM-yyyy)

Visit Id

Sex of child

Informant

Individual History – Person Timeline

Individual History

Individual Id: NBAS11

Clear

Memberships		
Social Group Id	Relationship to Group Head	

SG1K	04	View
------	----	----------------------

Relationships		
Individual A	Individual B	Relationship Type

SBAS17	NBAS11	2 View
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(No Social Group Items Found)

Residencies		
Individual	Location	Start Date

NBAS11	MBI001	20-11-1990 View
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(No In Migration Items Found)

(No Out Migration Items Found)

(No Pregnancy Outcome Items found)

(No Pregnancy Observation Items Found)

(No Death Items found)

Data Quality Routines

Validation Routine

Select the Entity to Validate:

[Individual](#)
[Location](#)
[Social Group](#)
[Relationship](#)
[Membership](#)
[Preg Outcome](#)
[Preg Observ](#)
[In Migration](#)
[Out Migration](#)
[Residency](#)
[Visit](#)
[Death](#)

Entity	Errors
visit	View
inMigration	View
	View
	View

Role-based access

New Role

Name:

Description:

Privileges:

- ☐ CREATE_ENTITY
- ☐ EDIT_ENTITY
- ☐ DELETE_ENTITY
- ☐ VIEW_ENTITY
- ☐ CREATE_USER
- ☐ DELETE_USER
- ☐ ACCESS_BASELINE
- ☐ ACCESS_UPDATE
- ☐ ACCESS_AMENDMENT_FORMS
- ☐ ACCESS_REPORTS
- ☐ ACCESSSS_UTILITY_ROUTINES

Create

Field worker
Notes

Create Note

Field Worker Id:

Description:

Create

Reports

- Household registers
- Identification book
- Temporary Ids
- Reconciliation reports
- Demographic rates

REPORTS

Demographic Rates

Household Register

Migration Ent Reconciliation

Preg Observ Reconciliation

Identification Book

Temporary Identification

Export to DHIS

Demographic Rates Calculation By Subsets of Individuals and Locations

Start Date for Analysis (dd-MM-yyyy): **Select Event Rate To Calculate**

End Date for Analysis (dd-MM-yyyy):

Select Individuals

- ☐ All Individuals
- ☐ Selected Individuals

Select Locations

- ☐ All Locations
- ☐ Selected Locations

Select Denominator Type:

- ☐ Person Days Observed
- ☐ Population at Mid-Point

- ☐ Fertility
- ☐ Mortality
- ☐ Child-Mortality-Ratios
- ☐ Marital
- ☐ Out-Migration
- ☐ In-Migration
- ☐ Internal-Migration
- ☐ Population

Output Type

- ☐ HTML
- ☐ CSV
- ☐ PDF
- ☐ XLS

Create Report Definition

Identification and Merging of Temporary ids automated

Merge Individual

Merging involves defining a Primary Individual, who will receive all InMigration and Membership events from another (Temporary) Individual.

Individual Id (Primary):

Individual Id (Temporary):

Events to Merge:

☐

In Migrations

☐

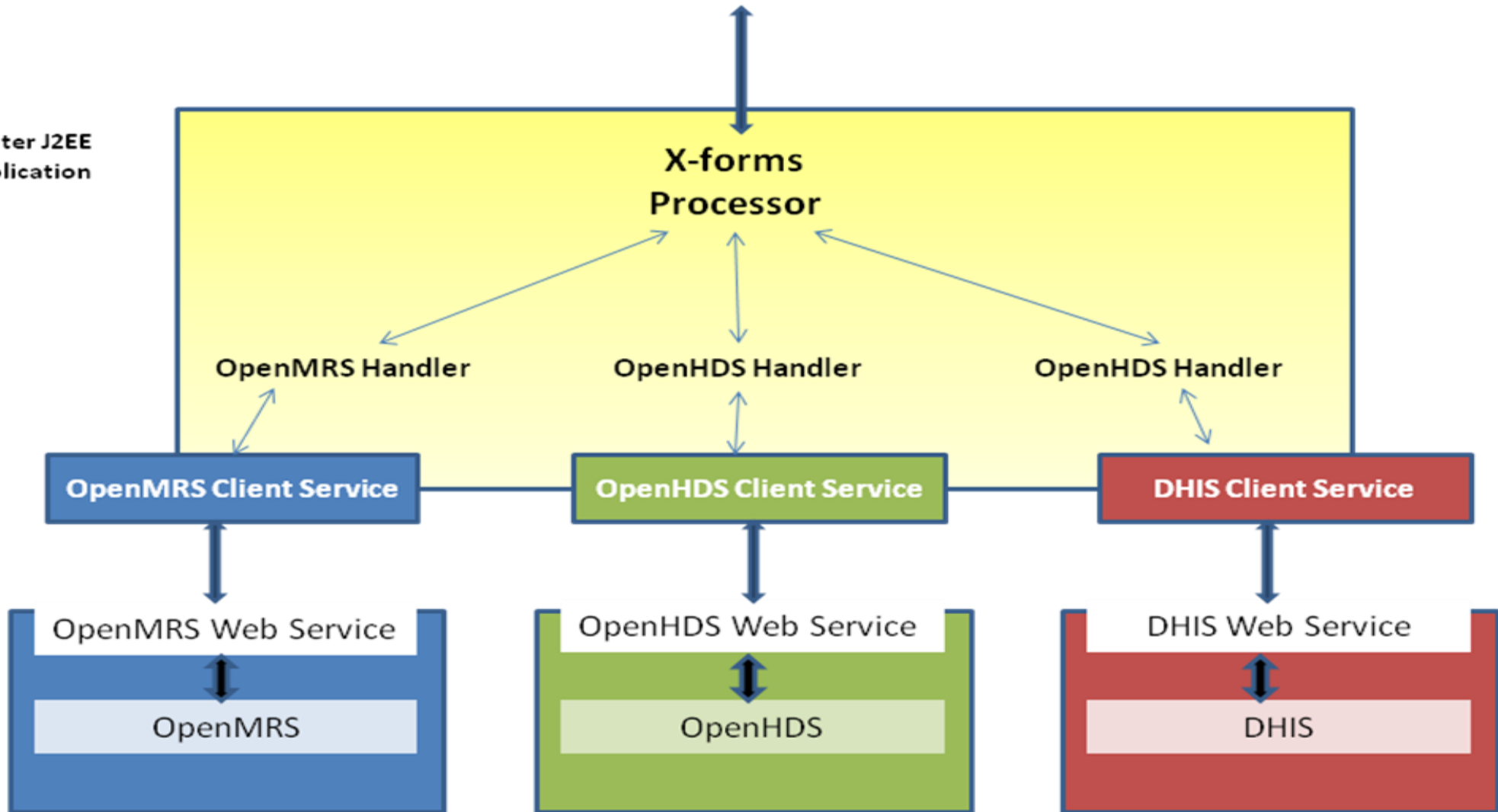
Memberships

Merge Individuals

Mobile X-forms
Client (Based on
OpenXdata)



Router J2EE
Application



Patient

Community

Aggregate/District

Mobile

- OpenXdata – J2ME based
- Open Data Kit – OpenHDS – Android-based
- GPS data for Geographical Information Mapping
- Audio
- Pictures – using phone cameras
- Video

Development Methodology


- Agile
 - Not just about exciting technology but technology driven by use cases
 - Users drive design
 - Iterative (2-weekly calls with CRHDSS)
- Scrum
- Open!

Ongoing and Future

- HDSS are 'heavy' and not many districts can have a DSS.
- Potentially, a scalable and sustainable model of a 'scaled'-down but integrated HDSS-HMIS that can be replicated country wide.
- Mobile-based HDSS can contribute to current policy debates on strengthening health systems

OpenHDS Community Wiki

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 - ☐ Roadmap



Home

Added by OpenHDS, last edited by OpenHDS on Sep 15, 2010 (view change)

OpenHDS

Welcome and thanks for visiting the OpenHDS wiki. OpenHDS is a health demographic system (HDS) web application. It is built on top of the Spring Framework, and uses Hibernate and Java Server Faces. The project is still in early development, but we welcome all feedback from the community. OpenHDS is an open source project, so anyone can contribute. This site is intended to be used by both developers and users of OpenHDS.

User Guide

Get up and running, and start using OpenHDS today. [Click here](#) for instructions.

Developer Documentation

OpenHDS is still in early development and we welcome contributions from developers. Get started by obtaining the OpenHDS source code, and setting up your development environment. [Click here](#) to get started.

Technical Overview

For a Technical Overview of the OpenHDS project, [click here](#).

Project Management

OpenHDS currently uses Redmine for project management. [Click here](#) to view the Redmine site.












 Tools ▾

Navigate space

Search

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- [-] [Developer Guide](#)
- [-] [Technical Documentation](#)

Recently Updated

 Registering a Death for Group Head updated by OpenHDS (view change)	Sep 23
 Registering a Pregnancy Outcome updated by OpenHDS (view change)	Sep 23
 Registering a Death updated by OpenHDS (view change)	Sep 23
 Entering new Data updated by OpenHDS (view change)	Sep 23
 Migration Into Location updated by Dave Roberge (view change)	Sep 22
 migration-15.PNG attached by Dave Roberge	Sep 22
 migration-14.PNG attached by Dave Roberge	Sep 22
 migration-13.PNG attached by Dave Roberge	Sep 22
 migration-12.PNG attached by Dave Roberge	Sep 22
 migration-11.PNG attached by Dave Roberge	Sep 22
 migration-10.PNG attached by Dave Roberge	Sep 22

- Website:

<http://openhds.rcg.usm.maine.edu>

- Mailing list:

<http://groups.google.com/group/openhds-users>

- Wiki:

<http://openhds.rcg.usm.maine.edu/wiki/>

- Source code repository

<http://svn.rcg.usm.maine.edu/redmine/projects/openhds>

Call to participation; contribute best practices from different sites

Demo online:

<http://openhds.rcg.usm.maine.edu/openhds/username/password; admin/test>

English Swahili

Login Required

User:

Password:

Login

Open Health and Demographic Surveillance System (OpenHDS)- Open Source License - Build 0.9.0-SNAPSHOT

This project is supported by the generous contributions of the IDRC

[Project Website](#) | [License](#) | [Code Repository](#)

Acknowledgement

- IDRC/CIDA, Canada
- INDEPTH Network
- Akpabuyo HDSS, Cross River
- University of Southern Maine
- Mailing list participants